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RAW SEQUENCE LISTING

DATE: 01/16/2002

PATENT APPLICATION: US/10/034,849

TIME: 16:00:36

Input Set : N:\Crif3\RULE60\10034849.raw

Output Set: N:\CRF3\01162002\J034849.raw

1 <110> APPLICANT: DIVERSA CORPORATION
 2 CALLEN, Walter
 3 MATHUR, Eric
 4 <120> TITLE OF INVENTION: ENZYMES HAVING HIGH TEMPERATURE POLYMERASE ACTIVITY
 5 AND METHODS OF USE
 6 THEREOF
 7 <130> FILE REFERENCE: DIVER1350-2
 8 <140> CURRENT APPLICATION NUMBER: 10/034,849
 9 <141> CURRENT FILING DATE: 2001-12-21
 11 <150> PRIOR APPLICATION NUMBER: US/09/656,309
 12 <151> PRIOR FILING DATE: 2000-09-06
 15 <160> NUMBER OF SEQ ID NOS: 2
 16 <170> SOFTWARE: PatentIn version 3.0
 18 <210> SEQ ID NO: 1
 19 <211> LENGTH: 2412
 20 <212> TYPE: DNA
 21 <213> ORGANISM: Pyrolobus fumarius
 22 <220> FEATURE:
 23 <221> NAME/KEY: CDS
 24 <222> LOCATION: (1)..(2412)
 25 <400> SEQUENCE: 1

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27	Met Thr Glu Val Val Phe Thr Val Leu Asp Ser Ser Tyr Glu Val Val	
28	1 5 10 15	
29	ggt aaa gag cct cag gta atc ata tgg ggt att gct gag aac ggc gag	96
30	Gly Lys Glu Pro Gln Val Ile Ile Trp Gly Ile Ala Glu Asn Gly Glu	
31	20 25 30	
32	agg gta gtc ctc att gac agg tct ttt cgc cca tac ttc tat gcg ctg	144
33	Arg Val Val Leu Ile Asp Arg Ser Phe Arg Pro Tyr Phe Tyr Ala Leu	
34	35 40 45	
35	ctt gca ccg ggc gcc gat cct aag cag gta gca caa cgt att cgt gca	192
36	Leu Ala Pro Gly Ala Asp Pro Lys Gln Val Ala Gln Arg Ile Arg Ala	
37	50 55 60	
38	ttg agt agg cca aag agc ccg att ata ggt gta gag gat gac aag agg	240
39	Leu Ser Arg Pro Lys Ser Pro Ile Ile Gly Val Glu Asp Asp Lys Arg	
40	65 70 75 80	
41	aag tac ttc ggg agg cct cgt agg gtc tta cgt att cgc acc gtg cta	288
42	Lys Tyr Phe Gly Arg Pro Arg Arg Val Leu Arg Ile Arg Thr Val Leu	
43	85 90 95	
44	ccc gag gct gtt agg gag tat cgc gaa ctc gta aag aac gtt gat ggt	336
45	Pro Glu Ala Val Arg Glu Tyr Arg Glu Leu Val Lys Asn Val Asp Gly	
46	100 105 110	
47	gtt gag gat gtt cta gag gcg gat ata cgc ttc gct atg cgc tat ctc	384

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48	Val Glu Asp Val Leu Glu Ala Asp Ile Arg Phe Ala Met Arg Tyr Leu	
49	115 120 125	
50	ata gat cac gat cta ttt cct ttc acc tgg tac cgt gta gag gct gag	432
51	Ile Asp His Asp Leu Phe Pro Phe Thr Trp Tyr Arg Val Glu Ala Glu	
52	130 135 140	
53	ccc ctc gag aac aag atg ggc ttc cgt gtc gac aag gta tac ctg gtt	480
54	Pro Leu Glu Asn Lys Met Gly Phe Arg Val Asp Lys Val Tyr Leu Val	
55	145 150 155 160	
56	aag agc agg ccg gag cca ctt tat ggt gag gct ctc gca cca acc aag	528
57	Lys Ser Arg Pro Glu Pro Leu Tyr Gly Glu Ala Leu Ala Pro Thr Lys	
58	165 170 175	
59	ctt ccc gat ctt agg ata ctc gcg ttc gat att gaa gtt tat agc aag	576
60	Leu Pro Asp Leu Arg Ile Leu Ala Phe Asp Ile Glu Val Tyr Ser Lys	
61	180 185 190	
62	caa ggg tcg ccg cgt cca gag cgc gat cct gta ata gtg ata gct gtg	624
63	Gln Gly Ser Pro Arg Pro Glu Arg Asp Pro Val Ile Val Ile Ala Val	
64	195 200 205	
65	aag act gac gat ggc gat gag gtg cta ttc att gca gag ggc aaa gac	672
66	Lys Thr Asp Asp Gly Asp Glu Val Leu Phe Ile Ala Glu Gly Lys Asp	
67	210 215 220	
68	gat cga aaa ccg ata cgc gag ttt gta gag tac gtg aag agg tat gac	720
69	Asp Arg Lys Pro Ile Arg Glu Phe Val Glu Tyr Val Lys Arg Tyr Asp	
70	225 230 235 240	
71	ccc gac ata ata gtc ggt tat aac aac aat cat ttc gat tgg cct tat	768
72	Pro Asp Ile Ile Val Gly Tyr Asn Asn Asn His Phe Asp Trp Pro Tyr	
73	245 250 255	
74	ctt ttg agg cgc gcc cgc atc cta ggc ata aag ctt gat gtg act aga	816
75	Leu Leu Arg Arg Ala Arg Ile Leu Gly Ile Lys Leu Asp Val Thr Arg	
76	260 265 270	
77	aga gtt ggc gcc gag ccc acc act agc gta cat ggg cac gtc tct gtc	864
78	Arg Val Gly Ala Glu Pro Thr Thr Ser Val His Gly His Val Ser Val	
79	275 280 285	
80	cct ggc agg ctt aac gta gat ctg tac gac tat gcc gaa gag atg cca	912
81	Pro Gly Arg Leu Asn Val Asp Leu Tyr Asp Tyr Ala Glu Glu Met Pro	
82	290 295 300	
83	gag atc aag ata aag agt ctc gag gag gtc gca gag tat cta ggc gtg	960
84	Glu Ile Lys Ile Lys Ser Leu Glu Glu Val Ala Glu Tyr Leu Gly Val	
85	305 310 315 320	
86	atg aag aag agt gaa cgc gtt atc atc aat tgg tgg gag att cca gac	1008
87	Met Lys Lys Ser Glu Arg Val Ile Ile Asn Trp Trp Glu Ile Pro Asp	
88	325 330 335	
89	tat tgg gac gac ccg aag aag aga cca cta tta ctg caa tac gcg cgc	1056
90	Tyr Trp Asp Asp Pro Lys Lys Arg Pro Leu Leu Leu Gln Tyr Ala Arg	
91	340 345 350	
92	gac gat gtc cgc gct act tac ggc tta gcc gag aag ata ttg ccg ttt	1104
93	Asp Asp Val Arg Ala Thr Tyr Gly Leu Ala Glu Lys Ile Leu Pro Phe	
94	355 360 365	
95	gct atc cag ttg tcg tac gta aca ggt ctc cca cta gac cag gta ggt	1152
96	Ala Ile Gln Leu Ser Tyr Val Thr Gly Leu Pro Leu Asp Gln Val Gly	

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98	gcg atg agt gtt ggc ttt cga ctt gaa tgg tac ctg ata cgc gcg gcg	1200		
99	Ala Met Ser Val Gly Phe Arg Leu Glu Trp Tyr Leu Ile Arg Ala Ala			
100	385	390	395	400
101	ttt aag atg aaa gag ctt gtg ccg aac cgc gtt gag cgc cca gaa gag	1248		
102	Phe Lys Met Lys Glu Leu Val Pro Asn Arg Val Glu Arg Pro Glu Glu			
103	405	410	415	
104	act tac cgt ggc gct ata gtt ctt gag ccg ttg aga ggc gtg cac gag	1296		
105	Thr Tyr Arg Gly Ala Ile Val Leu Glu Pro Leu Arg Gly Val His Glu			
106	420	425	430	
107	aat ata gcc gta ctc gac ttt agc tcg atg tac cca aac atc atg ata	1344		
108	Asn Ile Ala Val Leu Asp Phe Ser Ser Met Tyr Pro Asn Ile Met Ile			
109	435	440	445	
110	aag tac aat gtt ggt cct gac acg ctt gtg agg cct ggt gaa aag tgt	1392		
111	Lys Tyr Asn Val Gly Pro Asp Thr Leu Val Arg Pro Glu Glu Lys Cys			
112	450	455	460	
113	ggc gag tgt ggt tgc tgg gag gcc ccg gag gtc aag cac agg ttc cgt	1440		
114	Gly Glu Cys Gly Cys Trp Glu Ala Pro Glu Val Lys His Arg Phe Arg			
115	465	470	475	480
116	agg tgt ccg ccc ggc ttc ttc aag aca gtt ctt gag agg ctg tta gag	1488		
117	Arg Cys Pro Pro Gly Phe Phe Lys Thr Val Leu Glu Arg Leu Leu Glu			
118	485	490	495	
119	ctt cgt aag cgt gtg cgt gct gaa atg aag aag tat cct ccg gat agc	1536		
120	Leu Arg Lys Arg Val Arg Ala Glu Met Lys Lys Tyr Pro Pro Asp Ser			
121	500	505	510	
122	cca gaa tat cga ctg ttg gat gaa agg cag aag gcg ttg aag gtt ctt	1584		
123	Pro Glu Tyr Arg Leu Leu Asp Glu Arg Gln Lys Ala Leu Lys Val Leu			
124	515	520	525	
125	gca aac gct agt tac ggc tac atg ggt tgg agc ggc gct agg tgg tat	1632		
126	Ala Asn Ala Ser Tyr Gly Tyr Met Gly Trp Ser Gly Ala Arg Trp Tyr			
127	530	535	540	
128	tgc agg gag tgc gca aag gct gtc acg gct tgg ggt agg cac ctc ata	1680		
129	Cys Arg Glu Cys Ala Lys Ala Val Thr Ala Trp Gly Arg His Leu Ile			
130	545	550	555	560
131	cgc acc gcc atc aac ata gct cgt aaa cta ggc ctc aag gtg atc tac	1728		
132	Arg Thr Ala Ile Asn Ile Ala Arg Lys Leu Gly Leu Lys Val Ile Tyr			
133	565	570	575	
134	ggt gac aca gat tcg ctc ttc gtg acc tat gat ccg gag aag gtg gaa	1776		
135	Gly Asp Thr Asp Ser Leu Phe Val Thr Tyr Asp Pro Glu Lys Val Glu			
136	580	585	590	
137	aat ttc atc aaa att ata aag gag gag ctg ggg ttc gaa atc aag cta	1824		
138	Asn Phe Ile Lys Ile Ile Lys Glu Glu Leu Gly Phe Glu Ile Lys Leu			
139	595	600	605	
140	gag aag gtg tac aaa cgc tta ttc ttt aca gag gct aag aag agg tac	1872		
141	Glu Lys Val Tyr Lys Arg Leu Phe Phe Thr Glu Ala Lys Lys Arg Tyr			
142	610	615	620	
143	gct ggc ctt ctc gag gac gga cgt ata gat att gtc ggt ttc gag gct	1920		
144	Ala Gly Leu Leu Glu Asp Gly Arg Ile Asp Ile Val Gly Phe Glu Ala			
145	625	630	635	640

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146   gta cgt ggc gat tgg tgt gaa ctc gcc aag gag gtt cag act aag gtt      1968
147   Val Arg Gly Asp Trp Cys Glu Leu Ala Lys Glu Val Gln Thr Lys Val
148               645                      650                      655
149   gtc gaa ata gta ttg aag acg agt gag gtg aac aag gct gta gag tac      2016
150   Val Glu Ile Val Leu Lys Thr Ser Glu Val Asn Lys Ala Val Glu Tyr
151               660                      665                      670
152   gtc agg aag att gtg aaa gag ttg gag gag ggc aag gtt ccc ata gag      2064
153   Val Arg Lys Ile Val Lys Glu Leu Glu Glu Gly Lys Val Pro Ile Glu
154               675                      680                      685
155   aag ctt gta atc tgg aag acc ctt agt aag cgt ctt gag gag tac aca      2112
156   Lys Leu Val Ile Trp Lys Thr Leu Ser Lys Arg Leu Glu Glu Tyr Thr
157               690                      695                      700
158   acg gag gca cca cac gtc gtt gca gcg aag agg atg ctg tca gca ggc      2160
159   Thr Glu Ala Pro His Val Val Ala Ala Lys Arg Met Leu Ser Ala Gly
160   705                      710                      715                      720
161   tac cgg gta agc cca ggc gac aag ata ggg tat gta ata gtg aag ggt      2208
162   Tyr Arg Val Ser Pro Gly Asp Lys Ile Gly Tyr Val Ile Val Lys Gly
163               725                      730                      735
164   ggt ggc cgt atc agt caa aga gca tgg cca tac ttc atg gtc aag gat      2256
165   Gly Gly Arg Ile Ser Gln Arg Ala Trp Pro Tyr Phe Met Val Lys Asp
166               740                      745                      750
167   cct agc cag ata gac gtg acc tac tat gtt gac cac caa atc atc ccg      2304
168   Pro Ser Gln Ile Asp Val Thr Tyr Tyr Val Asp His Gln Ile Ile Pro
169               755                      760                      765
170   gct gca ttg aga ata ctg ggc tac ttt ggc atc acc gag aag aag ctg      2352
171   Ala Ala Leu Arg Ile Leu Gly Tyr Phe Gly Ile Thr Glu Lys Lys Leu
172               770                      775                      780
173   aaa gca agt gca act ggg cag aag act ctc ttc gac ttt cta gcc aag      2400
174   Lys Ala Ser Ala Thr Gly Gln Lys Thr Leu Phe Asp Phe Leu Ala Lys
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177   Lys Ser Lys
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180 <211> LENGTH: 803
181 <212> TYPE: PRT
182 <213> ORGANISM: Pyrolobus fumarius
183 <400> SEQUENCE: 2
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187   20          25          30
188   Arg Val Val Leu Ile Asp Arg Ser Phe Arg Pro Tyr Phe Tyr Ala Leu
189   35          40          45
190   Leu Ala Pro Gly Ala Asp Pro Lys Gln Val Ala Gln Arg Ile Arg Ala
191   50          55          60
192   Leu Ser Arg Pro Lys Ser Pro Ile Ile Gly Val Glu Asp Asp Lys Arg
193   65          70          75          80
194   Lys Tyr Phe Gly Arg Pro Arg Arg Val Leu Arg Ile Arg Thr Val Leu
195   85          90          95

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196   Pro Glu Ala Val Arg Glu Tyr Arg Glu Leu Val Lys Asn Val Asp Gly
197               100               105               110
198   Val Glu Asp Val Leu Glu Ala Asp Ile Arg Phe Ala Met Arg Tyr Leu
199               115               120               125
200   Ile Asp His Asp Leu Phe Pro Phe Thr Trp Tyr Arg Val Glu Ala Glu
201               130               135               140
202   Pro Leu Glu Asn Lys Met Gly Phe Arg Val Asp Lys Val Tyr Leu Val
203   145               150               155               160
204   Lys Ser Arg Pro Glu Pro Leu Tyr Gly Glu Ala Leu Ala Pro Thr Lys
205               165               170               175
206   Leu Pro Asp Leu Arg Ile Leu Ala Phe Asp Ile Glu Val Tyr Ser Lys
207               180               185               190
208   Gln Gly Ser Pro Arg Pro Glu Arg Asp Pro Val Ile Val Ile Ala Val
209               195               200               205
210   Lys Thr Asp Asp Gly Asp Glu Val Leu Phe Ile Ala Glu Gly Lys Asp
211               210               215               220
212   Asp Arg Lys Pro Ile Arg Glu Phe Val Glu Tyr Val Lys Arg Tyr Asp
213   225               230               235               240
214   Pro Asp Ile Ile Val Gly Tyr Asn Asn Asn His Phe Asp Trp Pro Tyr
215               245               250               255
216   Leu Leu Arg Arg Ala Arg Ile Leu Gly Ile Lys Leu Asp Val Thr Arg
217               260               265               270
218   Arg Val Gly Ala Glu Pro Thr Thr Ser Val His Gly His Val Ser Val
219               275               280               285
220   Pro Gly Arg Leu Asn Val Asp Leu Tyr Asp Tyr Ala Glu Glu Met Pro
221   290               295               300
222   Glu Ile Lys Ile Lys Ser Leu Glu Glu Val Ala Glu Tyr Leu Gly Val
223   305               310               315               320
224   Met Lys Lys Ser Glu Arg Val Ile Ile Asn Trp Trp Glu Ile Pro Asp
225               325               330               335
226   Tyr Trp Asp Asp Pro Lys Lys Arg Pro Leu Leu Leu Gln Tyr Ala Arg
227               340               345               350
228   Asp Asp Val Arg Ala Thr Tyr Gly Leu Ala Glu Lys Ile Leu Pro Phe
229               355               360               365
230   Ala Ile Gln Leu Ser Tyr Val Thr Gly Leu Pro Leu Asp Gln Val Gly
231               370               375               380
232   Ala Met Ser Val Gly Phe Arg Leu Glu Trp Tyr Leu Ile Arg Ala Ala
233   385               390               395               400
234   Phe Lys Met Lys Glu Leu Val Pro Asn Arg Val Glu Arg Pro Glu Glu
235               405               410               415
236   Thr Tyr Arg Gly Ala Ile Val Leu Glu Pro Leu Arg Gly Val His Glu
237               420               425               430
238   Asn Ile Ala Val Leu Asp Phe Ser Ser Met Tyr Pro Asn Ile Met Ile
239               435               440               445
240   Lys Tyr Asn Val Gly Pro Asp Thr Leu Val Arg Pro Gly Glu Lys Cys
241               450               455               460
242   Gly Glu Cys Gly Cys Trp Glu Ala Pro Glu Val Lys His Arg Phe Arg
243   465               470               475               480
244   Arg Cys Pro Pro Gly Phe Phe Lys Thr Val Leu Glu Arg Leu Leu Glu

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